

MODIS Team Meeting Minutes

Minutes of the MODIS Team Meeting held on Tuesday January 4, 1994.

Action Items:

70. Evaluate the thermal design of the Schaeffer Magnetics' motor/encoder. Assigned to Daelemans 8/31/93. Due 10/15/93
73. Complete the MODIS brochure and released for printing. Assigned to Bauernschub 10/18/93. Due 11/15/93.
74. Prepare and submit a Configuration Change Request which revises the definition and impact of levels of software criticality for the MODIS Software Management Requirements Document. Assigned to Anderson 10/26/93. Due 12/ 1/93
75. Determine if the four electronic module boxes can be individually thermal tested in air, or must the thermal testing be done in a vacuum. Assigned to Silva 10/26/93. Due 11/ 9/93
79. Consider advisability of bringing bad Readout ICs to GSFC for electrical tests or destructive physical analysis. Assigned to Bob Martineau 11/23/93. Due 12/ 7/93
82. Work with the MODIS team to obtain a consensus on a revised MODIS crosstalk specification and provide inputs for a Configuration Change Request. Assigned to Ed Knight 12/14/93. Due 1/11/9483.
83. Answer the following questions about instrument commands.
- a) Are there any commands or command sequences which can damage MODIS?
 - b) How does SBRC validate command macros before use on the instrument?

Assigned to Roberto 12/21/93. Due 1/14/94

The following items were distributed:

- 1) Weekly Status Report #120
- 2) SBRC Memos submission from week #112
- 3) Minutes of the last team meeting

Attendees:

✓ Dick Weber	Bruce Guenther	June Tveekrem
✓ John Bauernschub	✓ George Daelemans	✓ Bob Martineau
✓ Rosemary Vail	John Barker	✓ Bob Silva
✓ Lisa Shears	Joann Harnden	Ken Brown
✓ Mike Roberto	Patricia Weir	✓ Robert Kiwak
✓ Nelson Ferragut	✓ Mitch Davis	✓ Harvey Safren
✓ Gene Waluschka	Jack Ellis	✓ Ed Knight
Kate Forrest	✓ Ken Anderson	✓ Harry Montgomery
Bill Barnes	✓ Rick Sabatino	✓ Marvin Maxwell
✓ Les Thompson	✓ Cherie Congedo	Bill Mocarsky

Team Meeting and Other Topics

January 4, 1994

General

The CDR will be held from Tuesday, January 18 thru January 20. The software CDR is on January 21st. A trip to Orbit may be on January 17th.

A welcome back to Mitch Davis. Eight and a half weeks was not enough time for his travels to Japan, Australia, etc.

Mechanical

Nelson Ferragut is reviewing the stress analysis for the mainframe. He computes the margin of safety as about 0.12 rather than the 0.25 SBRC is calculating. However, as long as the margin is above zero, this should be okay.

Detectors

ReadOut Integrated Circuits

Bob Martineau mentioned that functional test data for the ROICs for lot 3 should be available by the end of January, and for lot 4 by end of February. This data may include showing if clocks work, switches work, and voltages are correct. They are holding back on lot 5.

Lot 1 had a mask design problem which hid another design problem which was found on lot 2. This problem was a parasitic transistor which developed and affected the switching between primary and redundant readouts. This design problem has been corrected in lots 3, 4, and 5. Problems believed to be processing related include the high threshold voltage (contamination problem) and the high analog currents. The TiNi barrier could be the reason for zero yield on lot 2; and this layer is being taken out on possibly part of lot 3.

Orbit

Orbit will be using the high voltage process to minimize changes in the circuit design. However, this is not their normal process.

PC Detectors

Lot 1 PC detectors are bad. There was not a complete delineation of the serpentine within the active area of individual detectors due to faulty etching. There was also a discoloration of the ionic oxide. SBRC will process lots 2, 3, and 4 as 4 wafer lots.

PV Detectors

SBRC has not yet started the third unit for temperature cycling.

S/MWIR

Six wafers out of 8 have been probe tested. Still yielding 30% good subarrays.

Software

Rick Sabatino discussed the interest of DCMC folks in software development folders. These are apparently not required in the MODIS contract. However, these would help in the day to day monitoring of the development of the software.

Science

Les Thompson attended the CERES CDR. There are important differences in how CERES is designing their GSE. Their solar calibration does not use spectralon. CERES is in a position of providing digital word out for photons in for the instrument. This all may mean we will need a delta CDR for MODIS.

Calibration is important for CERES as for MODIS. Our team should look into whether or not some of the approaches taken by CERES are sufficiently important to cause us to recommend any MODIS changes.

Electronics

Mitch Davis mentioned that SBRC is looking at doing what is needed to meet spec in terms of obtaining telemetry from the Cooler-Located Module (CLAM). It may be necessary to know the analog offset voltage for each PC detector if the detector is non-linear by more than 1 percent or so. One way of doing this would be to be able to reset each DAC in the CLAM and count increments or decrements sent to the DAC. However, there is not enough space for providing 60 reset lines and returns to the CLAM. We need to be sure this problem needs to be solved. The next question is how can it be efficiently solved. One thing to check is if it is possible to sense a voltage in the FAM and deduce reset has been reached. Other suggestions have been made in the previous weekly.

A design problem reduces the speed and temperature range of the Plessey 31750A microprocessor. There may also be radiation sensitivity. Plessey is also having problems getting two of these chips to work together, a feature that was not guaranteed, but which MODIS plans on using with the Command and Telemetry Processor and the Format Processor. Plessey sent a person to SBRC for several weeks to try to understand the problem.

The yield problems for the Harris devices continue; EPROMs are being used in the interim and may replace the PROMS permanently. As Mitch Davis stated at the last QMR, he believes we should switch to EEPROMS. However, the EEPROMS, supplied by SEEQ, have a unknown problem which results in 1 in 100,000 not programming properly according to Dick Julian. Until the problem is understood, it remains possible that this problem could be dependent on how the EEPROM is used and could affect MODIS.

Optical Design

Gene Waluschka has completed a report on ghost light along and cross track with the SBRC ghosting fixes in place.

STOP

Cherie Congedo mentioned she now has the SBRC ANSYS detector model. This model was used to predict stresses in the PC detectors during temperature cycling, etc. She will try to convert this model to NASTRAN.

Cherie has received the STOP structural model from SBRC and found the following possible problems with the SBRC model:

- 1) SBRC used different inertia values for the bands. Cherie put the SBRC inertia values into her model and her results did not vary significantly. Putting her band inertia values into the SBRC structural model increased the rotation of the radiant cooler by an order of magnitude (still an order of magnitude below Cherie's results).
- 2) The SBRC intermediate stage had two layers by mistake.
- 3) Part of the intermediate stage was incorrectly modeled so the load path from the fiberglass bands into the stage was incorrect. The result was that the SBRC model of the intermediate stage housing contracted symmetrically on cool down.

Cherie is trying to correct the SBRC model before CDR.

Quality Assurance

Bob Silva mentioned there are 43 criticality 1 failure points in MODIS based on the FMEA.

Mike Roberto January 5, 1994